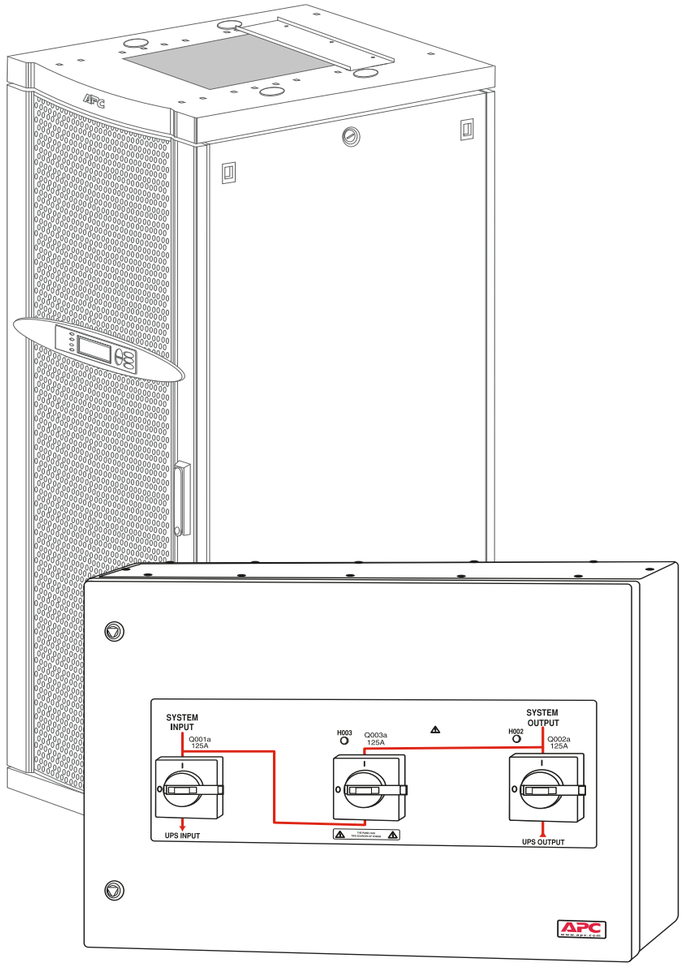
Maintenance Bypass Panel (MBP) 60 kW for Symmetra® PX 10 - 40kW, 400 V



1 IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS

This guide contains important instructions for the UPS and MBP that should be followed during the handling of UPS, batteries and MBP.

WARNING!
Risk of Electric Shock.

CAUTION!
Read this important information.

Indicates that a switch or current protection device is in the “ON” position.

Indicates that a switch is in the “OFF” position.

- All electrical power and power control wiring must be installed by a qualified electrician and comply with local and national regulations.
- Before working on the MBP, ensure that mains power is disconnected to the MBP and that Q1, Q2 and Q3 are in the OFF position.

Do not lift heavy loads without assistance.	< 18 kg	18 - 32 kg	32 - 54 kg	>54 kg

Figure 1.1

Install the Maintenance Bypass Panel in an Indoor, Controlled Environment				
Temperature Range: 0°-40°C	Keep Ventilated Front-to-Rear Airflow	Relative Humidity: <95% Non-condensing	Free of Conductive Dust or Corrosive Fumes	Max. Elevation: 0-3,000 m
Full Heat Loss at Nominal Mains: 9,496 BTU/hr (2,780 Watts)				

Figure 1.2

2 Total Power OFF Procedure

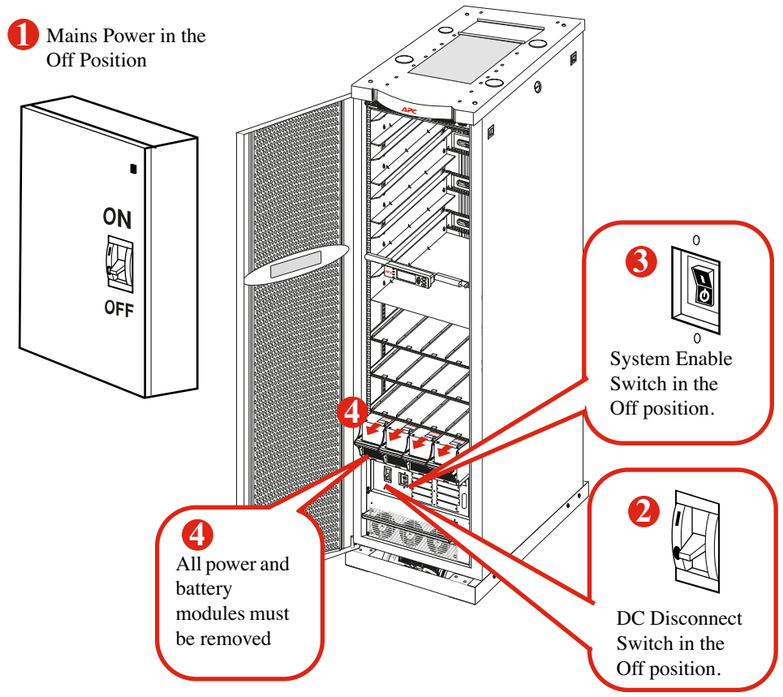


Figure 2.1

3 System Electrical Requirements

CAUTION!
All electrical power and power control wiring must be installed by a qualified electrician, and must comply with local and national regulation for maximum power rating.

UPS 40kW (40kVA) Output Rating			
Input Voltage +/- 15% at nominal voltages	3-Phase 380V	400V	415V
Input Current (nominal, per phase)	66A	62A	60A
Maximum Input Current (continuous, at minimum mains voltage)	88 A		
Input Current Protection (external to enclosure, not supplied)	100A *note 4		
Input Frequency	50 Hz		

Maintenance Bypass Panel 60kW / Symmetra® PX 10 - 40 kW, 400V
990-1277
Maintenance Bypass 60kW / Symmetra® PX 10 - 40 kW, 400V
990-1277

Output Voltage (on line)	3-Phase 380V	400V	415V
Output Current (nominal, per phase)	61A	58A	56A
Maximum Output Current (in bypass only at 125% overload, per phase)	76 A		
Neutral Output Current (with 100% switch mode load)	106A	100A *note 7	96A
Output Current Protection (external to enclosure, not supplied)	63A *note 5		

Recommended Source Connections

1) Input electricity to be provided from a dedicated, grounded 4-wire WYE power supply source with a grounded neutral.
2) Ensure clockwise voltage phase rotation (L_1,L_2,L_3).
3) All wire sizes must comply with national and local codes.

Recommended Current Protection

4) Input; 100 Amp gL type current-limiting fuse on each input phase.
5) Output; 63 Amp 3-Pole AC circuit breaker or a 63 Amp gL fuse with 30kAIC.

Recommended Wiring for a 40°C Temperature Environment

6) Input cables: 35mm^2. Output cables: 16 mm^2. External PE cable: 16 mm^2. Refer also to local electrical regulations.
7) Neutral Output Wires; rate for 173% of output phase current if feeding all Switch Mode Power Supply loads without power factor correction.

4 Wall Fitting

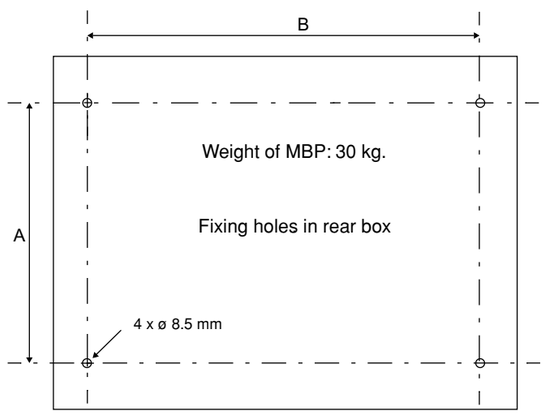
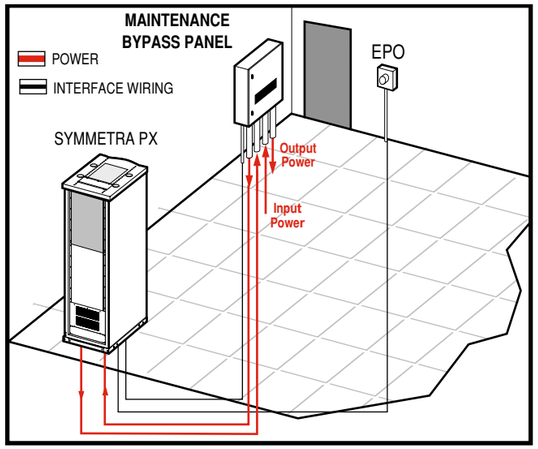
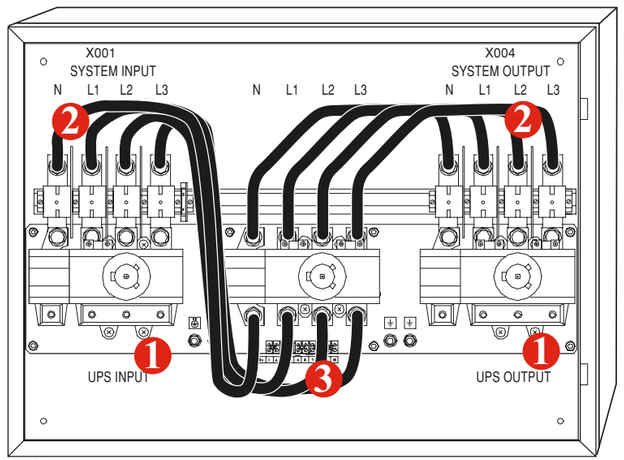


Figure 4.1

5 Wiring Overview



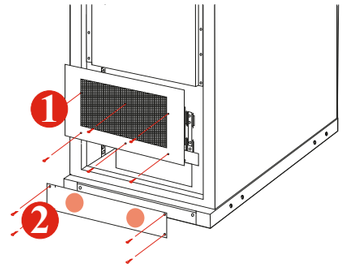
6 Input/Output Wiring



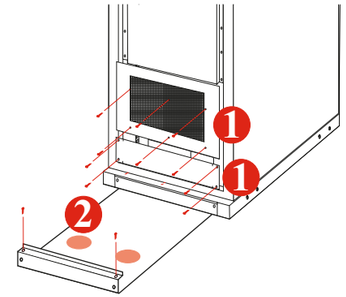
1. Connect UPS Input and Output power.
2. Connect System Input and Output.
3. Connect Maintenance Bypass Panel control wiring, X010.

! Make sure unit is in its location of use before wiring begins.

Rear Wiring

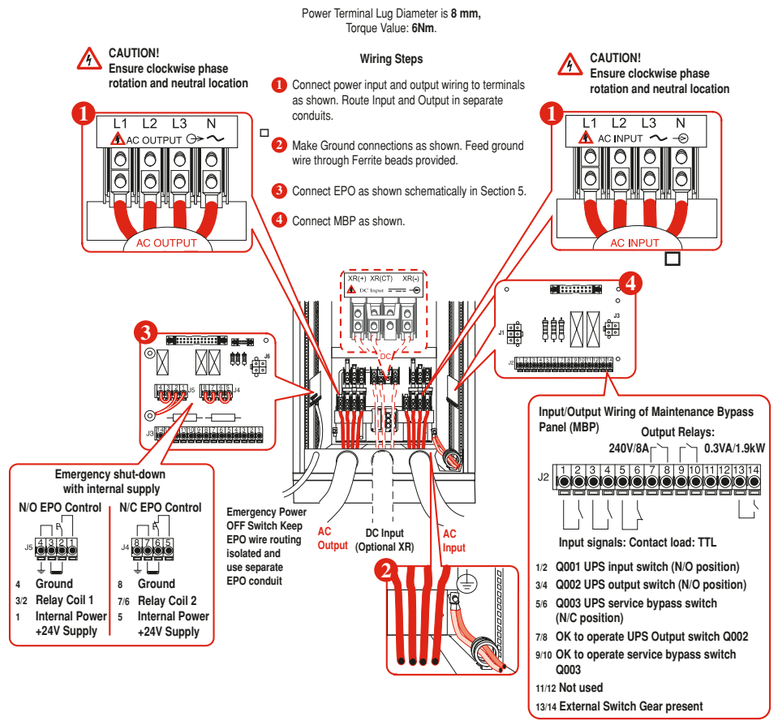


Bottom Wiring



1. Loosen screws to remove plate.
2. Punch holes as required and reinstall panel before mounting wiring hardware.

7 Connecting the UPS to the MBP


Power Terminal Lug Diameter is 8 mm,
Torque Value: 6Nm.
CAUTION!
Ensure clockwise phase rotation and neutral location
Wiring Steps
1 Connect power input and output wiring to terminals as shown. Route Input and Output in separate conduits.
2 Make Ground connections as shown. Feed ground wire through Ferrite beads provided.
3 Connect EPO as shown schematically in Section 5.
4 Connect MBP as shown.
CAUTION!
Ensure clockwise phase rotation and neutral location
L1 L2 L3 N
AC OUTPUT
AC INPUT
Emergency shut-down with internal supply
N/O EPO Control
N/C EPO Control
4 Ground
3/2 Relay Coil 1
1 Internal Power +24V Supply
8 Ground
7/6 Relay Coil 2
5 Internal Power +24V Supply
Emergency Power OFF Switch Keep EPO wire routing isolated and use separate EPO conduit
AC Output
DC Input (Optional XR)
AC Input
Input/Output Wiring of Maintenance Bypass Panel (MBP)
Output Relays:
240V/8A
0.3VA/1.9kW
Input signals: Contact load: TTL
1/2 Q001 UPS input switch (N/O position)
3/4 Q002 UPS output switch (N/O position)
5/6 Q003 UPS service bypass switch (N/C position)
7/8 OK to operate UPS Output switch Q002
9/10 OK to operate service bypass switch Q003
11/12 Not used
13/14 External Switch Gear present

8 Input/Output Wiring

This procedure will ensure correct wiring of Maintenance Bypass Panel

❑ 1 Ensure that both the DC Breaker and System Enable Switch are in the "OFF" or "STAND-BY" position.

❑ 2 Torque terminal screws to 1.6-1.8Nm, and terminal bolts to 6Nm. Verify wires in terminal block X010. Wires 1-10 to be connected to equipment interface 1-10.

❑ 3 Apply power to system input of Maintenance Bypass Panel and measure voltage at input terminal block (X001). **Measure and record voltages below between**
L1 and Neutral: _____ L2 and Neutral: _____ L3 and Neutral: _____

❑ 4 Ensure that phase rotation is correct.

Measured voltage must be 230 +/- 10%. If not, STOP! Verify correct wiring from the power source to the input wiring connections. Repeat step 1.

❑ 5 Ensure that wiring is correct.

❑ 6 Switch on Q001, Q003 and Q002

❑ 7 Measure voltage between input and output points on the Symmetra PX.
L1 input & L1 output: _____ L2 input & L2 output _____ L3 input & L3 output _____

Measured voltage must be 0 Volt + /-2 Volt. If not, STOP! Verify correct wiring from Maintenance Bypass Panel to Symmetra PX to Maintenance Bypass Panel.

❑ 8 Successful completion of steps 1 through 7 indicates that the Maintenance Bypass Panel wiring is correctly installed and functioning correctly. Turn off breakers and switches and shut down input power to the system. Reinstall all wiring access panels on the Symmetra PX.

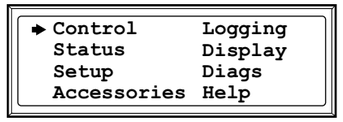
Wiring completed by:

Name: _____ Date: _____

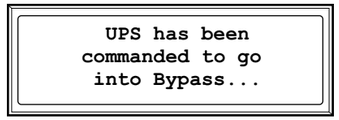
9 How to place the UPS into maintenance bypass operation

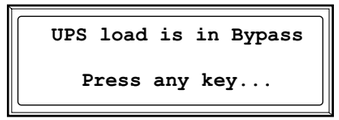
When servicing the UPS, place the UPS into maintenance bypass operation. When the UPS is operating in maintenance bypass, power flows directly from the utility to the Service Bypass Panel and out to the load equipment.

1) Command the UPS into static bypass operation through the UPS display interface:
   a) Press the ESC key at the Monitoring screen to open the Main menu.
   b) Select **Control** on the Main menu and press the ENTER key.



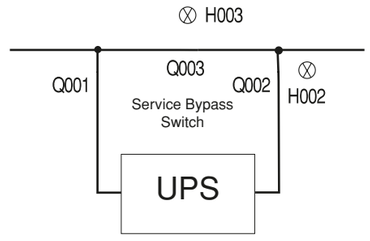
c) Select **UPS into Bypass** on the Control menu and press the ENTER key.
d) Confirm the selection on the next screen: Select **Yes, UPS into Bypass** and press the ENTER key. The BYPASS LED will illuminate and the display will show the following to screens:





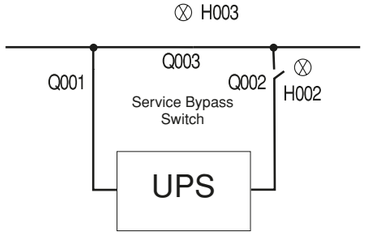
! The **H3** LED above the **Q3** breaker should illuminate, indicating that it is safe to operate the **Q3** breaker.

2) Close (turn ON) the Q3 breaker on the Maintenance Bypass Panel.

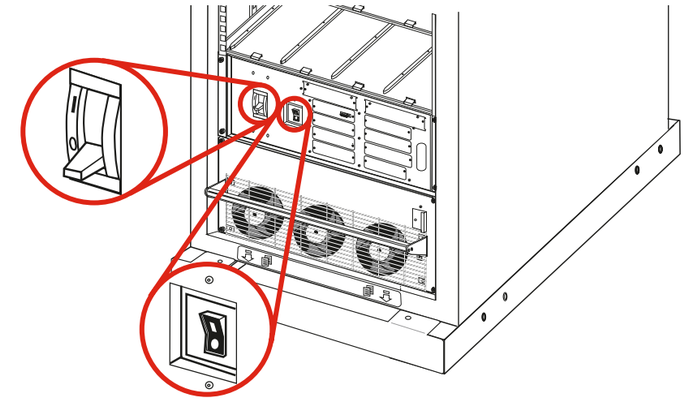


! The **H2** LED above the **Q2** breaker should illuminate indicating that it is safe to operate the **Q2** breaker.

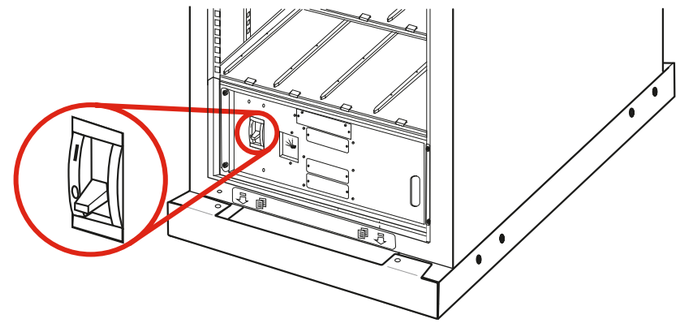
3) Open (turn OFF) the **Q2** breaker on the Service Bypass Panel.



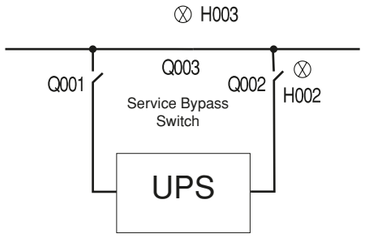
4) Set the Symmetra PX UPS **System Enable** switch and **DC Disconnect** breaker to the STANDBY position.



5) If applicable, set the XR Battery Enclosure DC Disconnect breaker to the STANDBY position.



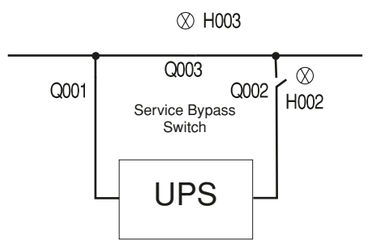
6) Open (turn OFF) the Q1 breaker on the Service Bypass Panel.



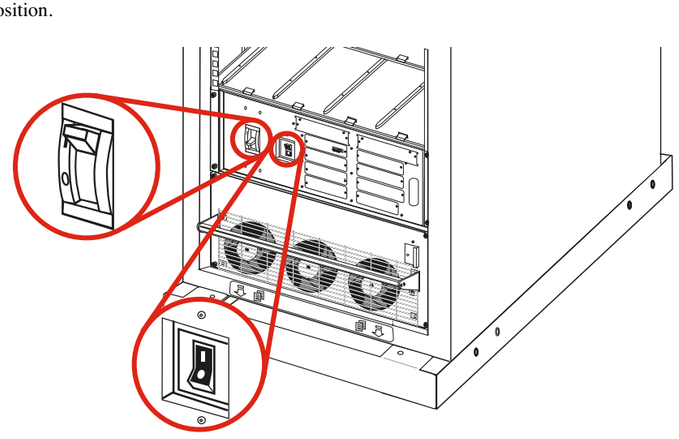
! When steps 1-6 have been completed, the UPS will be in maintenance bypass operation.

10 How to return to On-Line from Maintenance Bypass Operation

1) Close (turn ON) the **Q1** breaker on the Maintenance Bypass Panel.

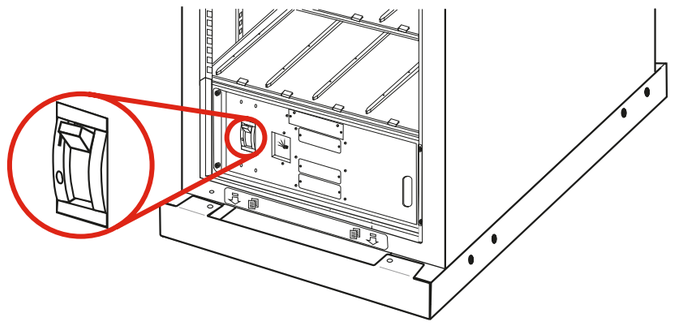


2) Set the Symmetra PX UPS **DC Disconnect** breaker and **System Enable** switch to the ON position.



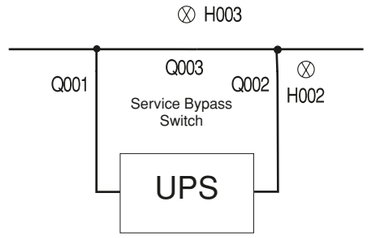
! As soon as you set the **DC Disconnect** breaker and the **System Enable** switch to the ON position, the UPS transfers to Static Bypass (with the load supported).

3) If applicable, set the XR Battery Enclosure **DC Disconnect** breaker to ON.



! The **H2** LED above the **Q2** breaker will illuminate, indicating that it is safe to operate the **Q2** breaker.

4) Close (turn ON) the Q2 breaker on the Service Bypass Panel.



! The **H3** LED above the **Q3** breaker will illuminate, indicating that it is safe to operate the **Q3** breaker.

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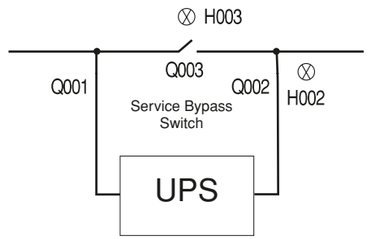
5) Open (turn OFF) the Q3 breaker on the Maintenance Bypass Panel.



! As soon as you open the **Q3** breaker, the UPS will automatically return from Static Bypass.